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SCIENCE NEWS LETTER



THE WEEKLY SUMMARY OF CURRENT SCIENCE.



JANUARY 16, 1932

Where Ambition Ended

See Page 42

A

SCIENCE SERVICE PUBLICATION



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Science

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SCIENCE SERVICE

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Edited by WATSON DAVIS

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DO YOU KNOW THAT

7

Rabbits have found a use for miniature golf courses, using the pipes and tunnels as winter apartments.

The number of big game animals in the United States' National Forests has passed the million mark.

In a study of the time taken to prepare meals in city homes it was found that breakfast took 27 minutes, dinner 55, and lunch or supper 31.

In the year 1414, the city of London introduced street lighting by ordering every house and shop owner on certain streets to hang out a lantern at sunset.

Reversing the old view that high-heeled shoes are harmful, a London physician reports that X-ray pictures show that heels two inches high or slightly lower distribute the weight of the body over the foot bones with less strain than flat heels cause.

Alaska produced gold worth \$9,342,000 in 1931, an increase of almost a million dollars over 1930 production.

Sweden and Denmark have signed an international agreement to protect migratory birds.

In the Chinese spoken language there are comparatively few words, but each word has many different meanings.

Streets in Britain are made skid-proof for winter by grooves pressed into the asphalt with a hot roller.

A building paper that stretches and looks like leather is the product of a year's intensive research.

The business of salvaging men's second-hand hats, especially from city dumps, and re-making and selling them has attained such proportions that one out of every eight men's hats now sold is said to be an "ash can hat."

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Science Service presents over the radio, an address

ODDITIES OF THE OCEAN

By Lieut. Commander R. R. Lukens, Chief of the Coast Pilot Section, U. S. Coast and Geodetic Survey.

Friday, January 22, at 3:45 P. M., Eastern Standard Time

Over Stations of
The Columbia Broadcasting System

SOCIOLOGY

United States Revealed As Most Murderous of Countries

Study Shows Rate Here Seventeen Times that of England, and Frees Big Cities of Crime Center Charge

"THE UNITED STATES is the most murderous country in the world," Dr. Kenneth E. Barnhart, sociologist of the Birmingham-Southern College, told scientists gathered at the meeting of the American Association for the Advancement of Science in New Orleans.

Approximately 12,000 murders were committed in this country during 1930. That rate was about 17 times that of England. This difference Dr. Barnhart attributes in part to the uncertainty and delay of justice in the United States and to the numerous technicalities that have grown up in American criminal law.

Chicago Fortieth

The largest cities do not have the most murders, Dr. Barnhart found from a study of homicide statistics, he reported. A list of the 30 most murderous cities in the country contains not a single one of the ten largest cities. Chicago, popularly believed to have a comparatively large number of murders in proportion to population, actually ranks fortieth among U. S. cities in that respect. New York ranks seventieth. Philadelphia ranks sixty-sixth. The city with the highest rate of murder has a population of less than 255,000.

A study of the 30 most murderous cities revealed that the lowest rate is in the East, with only a slightly higher rate in the West. The Middle West shows considerable increase over the East and West, but the South has a much greater rate than the other three sections.

Traditional Murder

"The custom of carrying firearms seems to be more general in the South than in other parts of the country," Dr. Barnhart reported. "Murder appears to be a traditional way of settling certain disputes among certain classes in the South, and especially among the Negroes. There is an interesting correlation between the decrease of illiteracy among Negroes in Birmingham and the decreasing rate of murder. With the decrease of illiteracy comes a change in the group pattern of behavior, with the

substitution of the court as a method of settling disputes rather than taking the law into one's own hands."

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GENERAL SCIENCE

Independent Experiment Purpose of New Institute

AT AN elevation of more than two miles above sea level, the Jungfrau Institute for Scientific Research has recently been dedicated, with a hundred representatives of international science and of the Swiss, German, and Austrian Governments in attendance.

For years European scientific societies have felt that a center of this sort, located on these heights, would be invaluable not only for astronomical research, but as a place where students of aerology, geology, chemistry, hydrology, and glaciology might be free to carry on independent experiment. The cost of erection to date has been one million Swiss francs, approximately two hundred thousand dollars. The Rockefeller Foundation figures among the contributors.

BIOCHEMISTRY

Growth-Promoting Vitamin Isolated by British Worker

VITAMIN A, the growth-promoting vitamin found in liver, cod liver oil, butter fat, egg yolk, and green and yellow vegetables, has just been isolated by Prof. J. C. Drummond, professor of biochemistry in University College, University of London, in association with Prof. I. M. Heilbron and Dr. R. A. Morton of Liverpool University.

In their report to the Society of Chemical Industry these scientists tell how they obtain the very elusive vitamin A by splitting carotene into two pro-



ABOVE THE CLOUDS

The new Alpine laboratory offers comfortable living and working quarters for scientists of all nations.

Built into the solid rock, this interesting structure, at a distance, might well be taken for an Alpine fortress. It is approached from the terminus of the Jungfrau Railway and hotel by a tunnel three hundred feet in length. It is five stories high, and is equipped with an elevator, electric heating, and hot and cold water. In addition to the several laboratories, there are a number of sleeping rooms, a dining room and a library, which are open to scientists of all nationalities for a nominal fee. Since its completion, a number of scientists have been in constant residence.

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ducts. Carotene is the pigment which gives the yellow color to carrots, yellow corn, butter and egg yolk. One of the two products obtained by splitting carotene is vitamin A, they believe. They describe it as an alcohol and state that it contains no nitrogen and has a potency about equal to that of the newly discovered crystals of vitamin D.

At the same time these investigators reported that they have obtained from halibut liver oil a sticky, yellowish oil which is nine-tenths pure vitamin A.

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MEDICINE

Tropical Scourge Conquered Through Research of Scientist

ATROPICAL scourge afflicting descendants of the Maya living in coffee-growing highland regions of Guatemala can now be wiped from the face of the earth through research by Dr. Richard P. Strong, Harvard's eminent investigator of tropical diseases, who has described to the American Association for the Advancement of Science his discovery of the cause and treatment.

At a cost of only about \$2 per inhabitant of the region, about \$300,000 in all for the estimated population of 150,000, Dr. Strong believes that a medical expedition could completely conquer this disease before it spreads to other parts of the tropics of the Americas.

More than half the Indians in some of the villages have unsightly tumors on their heads, caused by a worm, called scientifically *Filaria onchocerca*. After proving that the worms cause these abnormal growths, Dr. Strong searched for the manner in which the natives are infected. Knowing that most of the worm infections that plague other warm parts of the world are carried in one stage by insects, he considered the common biting insects of the regions as suspects.

A single kind of fly, known as the coffee fly and related to the turkey gnat of the southern United States, was found guilty. It breeds only in the swiftly flowing streams that are the only water supply of the region. When coffee flies bite a sufferer from the disease they are infected with one stage of the worm, which then develops in the fly and is passed on to a well person bitten by the fly. The way the disease is carried from insect to man and man to insect is much like the history of the parasite causing malaria.

Dr. Strong proposes that every tumor in the infected area be removed surgically, which can be done at the rate of 30 to 40 a day with complete safety. Every native would be tested by allowing a coffee fly to bite him to be sure that he is not a hidden carrier of the disease. Persistent carriers of the worms would be isolated. In this way the disease would be wiped out in one gigantic surgical effort.

The plague of the fiery serpents that afflicted the Hebrews in the wilderness (chapter 21 of Numbers) was caused by

the oldest known parasitic worm, *Filaria medinensis*, Dr. Strong declared. This is a common affliction in Bible lands and India today. It is one carried not by an insect but by a minute water animal called cyclops which infests drinking water.

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ETHNOLOGY

Snakes on Depression Menus Of Ancient Southwest India

SCOOPING rodents and snakes out of their holes in the desert and eating them was an Indian method of meeting hard times, long ago. "Rodent hooks," evidence of this struggle for existence in the desert, are displayed by the joint expedition of the Southwest Museum and the Eastern California Museum, which has returned from exploring in the Saline and Death Valleys.

Indians who tried to eke a living out of the arid, desolate Saline Valley long ago found almost no animal life around them, it is explained. Lizards, snakes and rodents, such as ground squirrels and gophers, were the chief animal inhabitants of the desolate country, and these creatures retreated into holes when hungry Indians pursued them. So the Indians devised a hook made of a wooden pole with a long-pointed tooth or blade fastened at a sharp angle to the end of the pole. Equipped with these hooks, Indian hunters fished out the desert animals.

No Indians live in the valley today, nor could the expedition find any evidence that tribes have tried to live there in recent times. It is believed that when the region was inhabited, it was not nearly so arid as it is now. There was once a lake in the valley. Whether Indian occupation goes back to the time when this lake was still in existence is not yet determined.

The expedition has obtained many household articles left by the valley's early residents. Cave shelters and circles of rocks where the Indians had camped were discovered, and also picture writings which the Indians left on boulders.

Explaining its part in the expedition, the Southwest Museum states that it is conducting a general survey in the south-



BREAD WINNERS

Two hooks used to catch the rodents which furnished Southwest Indians with food during hard times. The hooks, along with other artifacts, were found by an expedition into Saline Valley, Calif.

west under the direction of M. R. Harrington, with the aim of determining the antiquity of man in America. The interest of the Eastern California Museum in the desert valleys is to preserve the aboriginal remains there.

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GEOLOGY

Name "Geology" First Applied to Study of Law

GEOLGY, the study of the earth, is among the newer of the natural sciences, and its name is older than itself. The name "geology" was once applied to the study of human laws, Prof. Frank D. Adams of McGill University, Montreal, told his fellow-geologists at the meeting of the Geological Society of America at Tulsa, Okla.

Prof. Adams found the word so used in an old work called "Philobiblon or the Love of Books," written by Richard de Bury, Bishop of Durham, and first printed in Cologne in 1473. In it the worthy bishop says of the science of Law: "We may call by a special term Geologia or earthly science," as contrasted with the arts and sciences which were concerned with spiritual things. This older "geology" was thus a companion science to theology.

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MEDICINE

Injury to Head at Birth May Cause Mental Disorder

Brain Hemorrhage in Newly-Born Child Results in Ills Ranging in Severity from Backwardness to Imbecility

INJURIES to the heads of babies at birth may cause mental disorders ranging in severity from backwardness to epilepsy and imbecility, Dr. Leon S. Gordon of George Washington University School of Medicine stated in a report to the American Association for the Advancement of Science.

Chief of the birth injuries to babies is hemorrhage into the brain, Dr. Gordon said. When this condition is very severe, the child cannot survive. When it is very mild, the child may recover and be perfectly normal. In between these two extremes, Dr. Gordon finds all degrees of hemorrhage reflected in all degrees of mental disorder.

Of infants suffering from the latter types of hemorrhage Dr. Gordon says they are a "group in which mental subnormality or neuropathology is manifest sufficient to create candidates for homes for imbeciles and idiots, the epileptic colony, or the neurological institutions as the probable result of birth injury upon the central nervous system."

In a series of 180 postmortem examinations of babies born dead or dying soon after birth there was hemorrhage into the cranium in more than four out of five, Dr. Gordon reported that he found in his studies. Of 1,000 consecutive babies born alive, one out of ten showed blood in the cerebro spinal fluid, indicating an injury in the central nervous system.

Dr. Gordon called attention to the work of Dr. Aaron Capper of Philadelphia, who followed through 437 live-born, immature or underdeveloped babies that weighed at birth under five and one-half pounds. He found that only 55 per cent. were alive at the end of the first year and only 52 per cent. at the end of the fourteenth year.

"These children showed a multitude of deviations from the normal in psychic and mental progress," Dr. Gordon summarized Dr. Capper's findings.

"There was marked tardiness in holding up the head, and attempts to sit up. In the second year there were late attempts at walking or active speaking.

Many of the children did not progress normally in school with the rest of their mature fellow children; others were sent to schools for mentally inferior children.

"In brief, the immature infant will become the backward school child, is the potential future psychopathic or neuropathic patient, and even the potential inmate of the homes for imbeciles or idiots," Dr. Gordon declared.

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ECOLOGY

Cypresses Change Shape According to Water Depth

POND CYPRESSES, endlessly fascinating to all travellers in the South because of the great buttresses that brace their trunks and curious "knees" that bump themselves up on their roots, have yielded some of their secrets to Prof. Herman Kurz, botanist of the Florida State College for Women. In a report to the Ecological Society of America, he showed how these strange

trees respond to changes in their habitat.

Shallow water with a miry substratum favors the formation of cypress knees, Prof. Kurz said. Trees in deeper water are devoid of knees. Frequently the knees form a symmetrical circle around the base of the tree.

The buttresses around the trunk are also influenced by the depth of water in which the tree grows. Relatively constant deep water results in bottle-formed buttresses. Shallow water produces inverted saucer-shaped buttresses, and fluctuating water levels result in the formation of cone-shaped ones.

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ECOLOGY

Young Pond Cypresses Drown When Submerged

DROWNING a pond cypress would seem, at first blush, about as easy as drowning a catfish. Yet it can be done. In a report to the Ecological Society of America, Delzie Demaree of Little Rock, Ark., told about his experiments with seeds and young seedlings of this water-loving tree, which he performed in the St. Francis River, Arkansas, and Reel Foot Lake, Tennessee.

Seeds planted under water, he reported, never sprouted. Seedlings just emerged from the seed-coat never produced a leaf when submerged in water, regardless of the depth. Seedlings, regardless of age, died when submerged, the time depending on the temperature and the muddiness of the water.

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BOTANICAL BOTTLES

Pond cypresses have curiously shaped trunks as is shown in the above picture taken by Prof. Herman Kurtz, botanist of the Florida State College for Women, when the lake in which these strange trees stood was drained.

ANTHROPOLOGY

Domestic Occupations of the Eskimos

"A Classic of Science"

Eskimo Life Was Described Almost a Half Century Ago
By Dr. Franz Boas, Retiring President of the A. A. A. S.

THE CENTRAL ESKIMO. By Dr. Franz Boas. In *Sixth Annual Report of the Bureau of Ethnology to the Secretary of the Smithsonian Institution, 1884-85*. Washington, Government Printing Office, 1888.

IT IS winter and the natives are established in their warm snow houses. At this time of the year it is necessary to make use of the short daylight and twilight for hunting. Long before the day begins to dawn the Eskimo prepares for hunting. He rouses his housemates; his wife supplies the lamp with a new wick and fresh blubber and the dim light which has been kept burning during the night quickly brightens up and warms the hut. While the woman is busy preparing breakfast the man fits up his sledge for hunting. He takes the snow block which closes the entrance of the dwelling room during the night out of the doorway and passes through the low passages. Within the passage the dogs are sleeping, tired by the fatigues of the day before. Though their long, heavy hair protects them from the severe cold of the Arctic winter, they like to seek shelter from the piercing winds in the entrance of the hut.

The sledge is iced, the harnesses are taken out of the storeroom by the door, and the dogs are harnessed to the sledge. Breakfast is now ready and after having taken a hearty meal of seal soup and frozen and cooked seal meat the hunter lashes the spear that stands outside of the hut upon the sledge, hangs the harpoon line, some toggles, and his knife over the antlers, and starts for the hunting ground. Here he waits patiently for the blowing seal, sometimes until late in the evening.

Meanwhile the women, who stay at home, are engaged in their domestic occupations, mending boots and making new clothing, or they visit one another, taking some work with them, or pass their time with games or in playing with the children. While sitting at their

sewing and at the same time watching their lamps and cooking the meat, they incessantly hum their favorite tunes. About noon they cook their dinner and usually prepare at the same time the meal for the returning hunters. As soon as the first sledge is heard approaching, the pots, which have been pushed back during the afternoon, are placed over the fire, and when the hungry men enter the hut their dinner is ready. While hunting they usually open the seals caught early in the morning, to take out a piece of the flesh or liver, which they eat raw, for lunch. The cut is then temporarily fastened until the final dressing of the animal at home.

In the western regions particularly the hunters frequently visit the depots of venison made in the fall, and the return is always followed by a great feast.

A Religious Custom . . .

After the hunters reach home they first unharness their dogs and unstring the traces, which are carefully arranged, coiled up, and put away in the storeroom. Then the sledge is unloaded and the spoils are dragged through the entrance into the hut. A religious custom commands the women to leave off working, and not until the seal is cut up are they allowed to resume their sewing and the preparing of skins. This custom is founded on the tradition that all kinds of sea animals have risen from the fingers of their supreme goddess, who must be propitiated after being offended by the murder of her offspring. The spear is stuck into the snow at the entrance of the house, the sledge is turned upside down, and the ice coating is removed from the runners. Then it is leaned against the wall of the house, and at last the hunter is ready to enter. He strips off his deerskin jacket and slips into his sealskin coat. The former is carefully cleaned of the adhering ice and snow with the snowbeater and put into the storeroom outside the house.

This done, the men are ready for their

dinner, of which the women do not partake. In winter the staple food of the Eskimo is boiled seal and walrus meat, though in some parts of the western districts it is musk ox and venison, a rich and nourishing soup being obtained by cooking the meat. The natives are particularly fond of seal and walrus soup, which is made by mixing and boiling water, blood, and blubber with large pieces of meat.

The food is not always salted, but sometimes melted sea water ice, which contains a sufficient quantity of salt, is used for cooking. Liver is generally eaten raw and is considered a tidbit. I have seen the intestines eaten only when there was no meat.

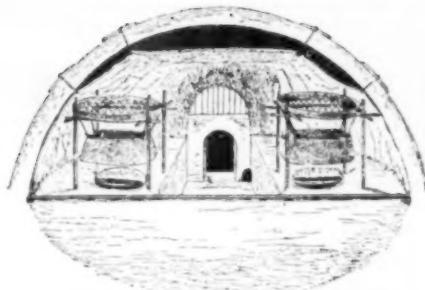
Forks are used to take the meat out of the kettle and the soup is generally poured out into a large cup. Before the introduction of European manufactures these vessels and dishes generally consisted of whalebone. One of these has been described by Parry. It was circular in form, one piece of whalebone being bent into the proper shape for the sides and another flat piece of the same material sewed to it for a bottom, so closely as to make it perfectly watertight. A ladle or spoon is sometimes used in drinking it, but usually the cup is passed around, each taking a sip in turn. In the same way large pieces of meat are passed round, each taking as large a mouthful as possible and then cutting off the bit close to the lips. They all smack their lips in eating. The Eskimo drink a great deal of water, which is generally kept in vessels standing near the lamps. When the men have finished their meal the women take

Lava, Granite and Quartz

form as series covering the modern rock formation from fusion to simple crystallization, described by

SORBY

IN THE NEXT CLASSIC OF SCIENCE



INTERIOR OF A SNOW HOUSE
A bed on a snowbank, lamps and a supply of meat are the Eskimos' chief furniture.

their share, and then all attack the frozen meat which is kept in the storerooms. The women are allowed to participate in this part of the meal. An enormous quantity of meat is devoured every night, and sometimes they only suspend eating when they go to bed, keeping a piece of meat within reach in case they awake.

After dinner the seals, which have been placed behind the lamps to thaw, are thrown upon the floor, cut up, and the spare meat and skins are taken into the storerooms. If a scarcity of food prevails in the village and a hunter has caught a few seals, every inhabitant of the settlement receives a piece of meat and blubber, which he takes to his hut, and the successful hunter invites all hands to a feast.

The dogs are fed every second day after dinner. For this purpose two men go to a place at a short distance from the hut, taking the frozen food with them, which they split with a hatchet or the point of the spear. While one is breaking the solid mass the other keeps the dogs off by means of the whip, but as soon as the food is ready they make a rush at it, and in less than half a minute have swallowed their meal. No dog of a strange team is allowed to steal anything, but is kept at a distance by the dogs themselves and by the whip. If the dogs are very hungry they are harnessed to the sledge in order to prevent an attack before the men are ready. They are unharnessed after the food is prepared, the weakest first, in order to give him the best chance of picking out some good pieces. Sometimes they are fed in the house; in such a case, the food being first prepared, they are led into the hut singly; thus each receives his share.

All the work being finished, boots and stockings are changed, as they must be dried and mended. The men visit one another and spend the night in

talking, singing, gambling, and telling stories. The events of the day are talked over, success in hunting is compared, the hunting tools requiring mending are set in order, and the lines are dried and softened. Some busy themselves in cutting new ivory implements and seal lines or in carving. They never spend the nights quite alone, but meet for social entertainment. During these visits the host places a large lump of frozen meat and a knife on the side bench behind the lamp and every one is welcome to help himself to as much as he likes.

The first comers sit down on the ledge, while those entering later stand or squat in the passage. When any one addresses the whole assembly he always turns his face to the wall and avoids facing the listeners. Most of the men take off their outer jacket in the house and they sit chatting until very late. Even the young children do not go to bed early.

The women sit on the bed in front of their lamps, with their legs under them, working continually on their own clothing or on that of the men, drying the wet footgear and mittens, and softening the leather by chewing and rubbing. If a bitch has a litter of pups it is their

business to look after them, to keep them warm, and to feed them regularly. Generally the pups are put into a small harness and are allowed to crawl about the side of the bed, where they are tied to the wall by a trace. Young children are always carried in their mothers' hoods, but when about a year and a half old they are allowed to play on the bed, and are only carried by their mothers when they get too mischievous. When the mother is engaged in any hard work they are carried by the young girls. They are weaned when about two years old, but women suckle them occasionally until they are three or four years of age. During this time they are frequently fed from their mothers' mouths. When about twelve years old they begin to help their parents, the girls sewing and preparing skins, the boys accompanying their fathers in hunting expeditions. The parents are very fond of their children and treat them kindly. They are never beaten and rarely scolded, and in turn they are very dutiful, obeying the wishes of their parents and taking care of them in their old age.

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OCEANOGRAPHY

Submerged Beach Proves to Be Island Once 30 Times Larger

OCANOGRAPHER'S nets, torn on sea beaches now submerged more than a mile and a half, have yielded scientists new knowledge about the Bermudas, popular resort islands, revealing that these islands, which are now smaller than Manhattan, were once nearly thirty times their present size. This evidence of the past extent of the Bermudas was obtained by Dr. William Beebe, of the New York Zoological Society, working near the scene of his 1930 quarter-mile descent below the surface of the water in a hollow steel sphere.

"The sea floor at 1,000 to 1,500 fathoms is usually comparatively smooth and flat," Dr. Beebe says in a report of his work to *Science*. "But my nets and dredges have encountered obstacles at every trawl, obstacles similar in hardness and in the bits of broken rock which came up, to the water- and air-worn reef-rocks in shallow water near the shore."

"Four-foot iron dredges were used this year with unexpected results. About two hauls were made with each dredge before it was lost, and at each successful haul the dredge was bent almost double. One-half square-inch mesh netting was used on the dredge, which allowed most of the ooze to slip through. What remained was of great interest since it consisted almost entirely of water-worn pebbles, shells and bits of coral."

The submerged beaches enable Dr. Beebe to estimate that the Bermudas once had a land area of at least 576 square miles, a much larger figure than that of 230 square miles, the area geologists assign the islands for glacial periods when the oceans were lower because their water was in the form of ice around the north and south polar regions. He believes the land itself might also have changed some in altitude, but not more than 150 feet.

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ASTRONOMY

American Astronomer Given Medal of British Society

THE HIGHEST honor of the Royal Astronomical Society, its Gold Medal, has been awarded an American, Dr. Robert Grant Aitken, director of the Lick Observatory of the University of California, it was announced at London. Dr. Aitken becomes the nineteenth American to receive this medal, which has been given annually by the British society since 1824.

Dr. Aitken is considered a leading authority on double stars, shown by the telescope to consist of two or more bodies revolving around each other. He has been director of the Lick Observatory since the retirement of Dr. William Wallace Campbell in 1930. Dr. Aitken is a native Californian, and was graduated from Williams College in 1887. His connection with the Lick Observatory dates from 1895.

The first American to receive the Gold Medal of the Royal Society was George P. Bond, second director of the Harvard College Observatory, to whom it was given in 1863. Six of the past eighteen American recipients are living. They are: Dr. George Ellery Hale, honorary director of the Mount Wilson Observatory; Dr. William Wallace Campbell, director emeritus of the Lick Observatory; Dr. Ernest W. Brown, of Yale University; Dr. Walter S. Adams, director of the Mount Wilson Observatory; Dr. Henry Norris Russell, professor of anatomy at Princeton University, and Dr. Frank Schlesinger, director of the Yale University Observatory. The recipient last year was Dr. Willem de Sitter, of the University of Holland.

Science News Letter, January 16, 1932

PSYCHOLOGY

Schooling Fails to Remove Public's Belief in Magic

"**T**HE SCHOOL has done very little in eradicating magical beliefs from the minds of the common people," Dr. A. O. Bowden, president of the New Mexico State Teachers College, said in a report to the American Association for the Advancement of Science.

Dr. Bowden found no relation to exist between the amount of schooling a person had had and the extent of his belief in magic and superstition.

A six-year investigation made by Dr. Bowden indicates that 86 persons out of

every hundred believe that beautiful pictures, fine music, and fine home surroundings will in some mysterious way make people moral and virtuous. Sixty-five per cent. believe fish to be a better brain food than bacon. And 92 per cent. believe that the great majority of the American people, by reason of an innate ability to tell right from wrong, will naturally take the right side of any big public question in the state or nation when allowed to vote on it.

The average belief in the fallacies used by Dr. Bowden in his test was 49½ per cent. among the population in general. Among teachers it was 46½ per cent. There is evidently a difference of only 3 per cent. between the superstition of teachers and of those whom they have taught.

Science News Letter, January 16, 1932

ZOOLOGY

Cockroaches Evolved From Voracious Termites

EVIDENCE that roaches, among whose numbers are some of our worst house pests, evolved from termites, which sometimes literally eat our houses from under our feet, has been found in a species of wild roach living in the Appalachians and in certain localities in the Pacific Coast area. This has been reported to the American Association for the Advancement of Science by Dr. L. R. Cleveland, Elizabeth P. Sanders and S. R. Hall, of Harvard University Medical School.

The evidence was quite literally found in the roaches, for it consists of certain one-celled animals, or protozoa, hitherto known only from the digestive tracts of termites. These protozoa serve their termite hosts by digesting the wood which is their exclusive diet. Without their internal equipment of protozoa the termites would starve, as Dr. Cleveland demonstrated several years ago, when he shared the Association's annual thousand-dollar prize for a paper on his discovery.

Like the termites, these woodland roaches are wood-eaters, and their internal protozoa apparently do their digesting for them.

The possibility that these roaches swapped internal inhabitants with the termites in comparatively recent times is barred by their distribution, Dr. Cleveland reported. These particular roaches have not been neighbors with the termites that carry similar protozoa since the days of the dinosaurs.

Science News Letter, January 16, 1932



NUTRITION

Jobless Nutritionists Teach Nutrition to Needy

UNABLE to find jobs themselves, a number of young trained home economics workers have volunteered their services as nutritionists to the American Red Cross at Washington. They are ready to teach others, reduced like themselves to straitened circumstances, how to spend more wisely their food money, how to reduce other household expenses and how to prepare budgets which will safeguard their health. In return the local Red Cross chapter meets the living expenses of these volunteer nutritionists and pays transportation to and from their homes.

One such volunteer is already at work at Marion, Ohio. She is teaching classes in schools, mothers' clubs and elsewhere, the inexpensive nourishing foods that may be substituted for the more expensive ones in their daily diet, the foods that can be safely omitted altogether, and the methods of cooking the cheaper foods that will make them more palatable and nutritious. Another nutritionist will soon be on her way to Lewiston, Maine, to do work there.

Science News Letter, January 16, 1932

ENGINEERING

Pipe Lines in Gas Fields May Carry Solid Products

EVEN an exhaustion of natural gas fields would not necessarily cause the junking of the thousands of miles of pipe lines recently built to carry gas to industrial centers, Prof. J. H. Pound of the Rice Institute, believes.

As long as the nation continues to develop, the expansion of the pipe line method of transporting oil, gasoline, natural gas and possibly other materials seems unavoidable, Prof. Pound stated in a report to the American Association for the Advancement of Science.

"Solid fuels in suspension may some day be a promising pipe line load, and so may certain chemicals or even some foods," he said.

Science News Letter, January 16, 1932

SCIENCE FIELDS

PHYSIOLOGY

Stomach Aches May Be Warning Signal From Heart

PAIN in the abdominal region is not always a mere querulous complaint from that fussy and often-clamoring organ, the stomach. It may be a report of serious trouble from an organ higher up where trouble is apt to be serious, indeed—the heart.

So two physicians, Dr. Louis Faugeres Bishop and Dr. Louis Faugeres Bishop, Jr., of New York City, have reported to the American Association for the Advancement of Science.

Prominent persons reported by the press as dying of "acute indigestion" are often victims of heart disease, they declared.

"Every year a number of persons with obstruction of the arteries supplying the heart with blood are subjected to an operation involving the opening of the abdomen in the search for the cause of the severe pain referred to regions belonging to the diaphragm," their report said. "If this happens when every means has been employed to test the possible cardiac origin of the pain by a technical examination of the heart, nothing is to blame except the limitation of medical knowledge. Changes in the electricity of the heart often give the only positive information that may prove the existence of coronary thrombosis and avert a dangerous operation."

Science News Letter, January 16, 1932

PHYSIOLOGY

Insanity Study Gives New Drug Addiction Treatment

A NEW METHOD for the treatment of morphine addiction has been suggested to the National Academy of Sciences by Dr. Wilder D. Bancroft, Dr. Robert S. Gutsell and J. E. Rutzler, Jr., of Cornell University. Their investigations with dogs showed that the chemical, sodium rhodanate, would prevent withdrawal symptoms when animals addicted to morphine were abruptly deprived of the drug.

The way is clear for the use of sodium rhodanate in the treatment of drug

addiction in human beings," their report, published in the Proceedings of the National Academy of Sciences, concludes after describing the investigation.

A major difficulty in "curing" drug addiction has been the fact that when the addict is deprived of the drug to which he has become habituated, he suffers intolerable pain, nervousness, sleeplessness and prostration. These withdrawal symptoms are only relieved by the drug from which he is trying to be freed. Various methods of bringing the patient safely through this stage have been advocated but none has been unqualifiedly successful.

Sodium rhodanate, given a short time before the morphine is withdrawn, prevented the onset of withdrawal symptoms in the morphine-addicted dogs.

The use of this chemical resulted from Dr. Bancroft's earlier study of insanity. He believes that many brain disorders are caused by the jelly-like colloid substances of the brain being either too thick, or too thin. In morphine addiction these brain proteins are too thick and sodium rhodanate thins them, Prof. Bancroft has found.

Science News Letter, January 16, 1932

SEISMOLOGY

Submarine Shock Breaks Earthquake Moratorium

THE MORATORIUM on earthquakes which has existed for a month and a half has been broken by a moderate earth shock on the bottom of the Pacific Ocean near Easter Island. The region of 27 degrees south latitude, 112 degrees west longitude was visited by a submarine disturbance, Monday, January 4, at 8.54 P. M., eastern standard time, the U. S. Coast and Geodetic Survey determined from reports to Science Service from five observatories.

This quake ends an unusually long period of little earth activity which has existed since November 20, when there was a disturbance in the Western Pacific area near the Solomon Islands. During this time no shocks of sufficient strength to be located have been reported to Science Service from cooperating observatories throughout the world.

Stations reporting the quake near Easter Island were the observatories of the U. S. Coast and Geodetic Survey at Honolulu and Tucson, Ariz.; the Seismological Observatory, Pasadena, Calif.; Georgetown University, Washington, D. C., and Canisius College, Buffalo, N. Y.

Science News Letter, January 16, 1932

ENGINEERING

Rubbish Becomes Fuel For London Power Plant

LONDON'S huge rubbish heap which has been accumulating near Dagenham for many years will be used as fuel instead of coal in boilers of a new Ford motor plant, Dr. Ernest W. Smith, English combustion engineer, has stated.

Sixteen cells for burning the refuse are being built, it was said, which will consume 300 tons of waste a day to produce steam at 1,200 pounds per square inch pressure and 1,100 degrees Centigrade, which can be used for heating, for producing electricity or in manufacturing processes. The refuse is claimed to have a heat value of 3,000 British Thermal Units in summer and 4,000 in winter compared with values ranging from 12,000 to 15,000 units for the best coals.

Though not the first plant to destroy city waste and at the same time salvage useful power from it, the new Ford installation is thought to be the largest. Dr. Smith estimates that a plant incinerating 2,000 tons of trash from London per day would achieve a net revenue per ton of about one shilling, or seventeen cents at present rates of exchange. This income would be derived from hard clinker for use in road building, scrap metal and electricity.

Science News Letter, January 16, 1932

AGRICULTURE

New Field Spacing of Corn Produces Greater Yield

THE PRESENT system of planting corn in hills about three feet apart, with two or more seeds to the hill, is not the best for maximum production per acre. Such is the indication of experiments reported by Dr. Geo. H. Dungan of the University of Illinois, speaking before the meeting of the American Society of Plant Physiologists at New Orleans.

Dr. Dungan tried raising the same number of stalks per acre that is customary under present practice, but spacing them evenly instead of bunching them in hills. He found that the yield was improved in several respects: more stover, greater grain yield at the thinner rates of planting, greater uniformity of plant size and weight of ear. There was also an indication that the individually spaced plants matured earlier.

Science News Letter, January 16, 1932

ARCHAEOLOGY

A Pharaoh's Righthand Man

Exploration of Tomb of Ken-Amun Shows Him to Have Been a Scheming Politician, Adept in Self-Advertising

By EMILY DAVIS

ADD THE NAME of Ken-Amun, ambitious Egyptian politician, a Pharaoh's righthand man, to the list of unusual personalities from ancient Egypt.

Ken-Amun's tomb, cut into a rocky hillside in the Valley of the Kings, has been known for almost a century, but has been strangely neglected. Now, it has been thoroughly explored and studied by the Egyptian Expedition of the Metropolitan Museum of Art. Norman de Garis Davies took charge of this part of the expedition's work.

As a result, Ken-Amun, who in his busy lifetime rejoiced in the titles of Chief Steward of the King and Overseer of the Cows of Amun and some eighty more responsibilities and distinctions, today has been given a typical twentieth century honor. A large and impressive volume has been devoted exclusively to him and his greatest monument, his underground tomb. Judging by what is known of Ken-Amun's character, he would heartily enjoy the limelight. He liked it when he lived in Thebes, back in the fifteenth century B. C.

Notoriously Ambitious

Officials in Egypt were notably, perhaps notoriously ambitious. And even among these, Ken-Amun, Chief Steward to Pharaoh Amenhotep II, stands out as a man so adept at self-advertising that he made the very most of every compliment and honor that ever came his way.

When he finally summed up his career in paintings and inscriptions on the walls of his tomb, Ken-Amun included every assignment that the Pharaoh had ever delegated to him, however briefly, in order to string along an honors list of almost a hundred items. Some of these titles make quaint reading. Here a few of them:

"One quick of thought for the sovereign. . . . One who has every pleasure at his call every hour. . . . If he stands before an enterprise it is done of itself. . . . A noble who finds pleasure in the

fields. . . . To whom one says what is in the heart."

The posts really held by this Egyptian government official were two. As Chief Steward, he was in control over all the revenues and work done on the King's estates. And as Overseer of the Cattle of Amun, he was responsible for the herds sacred to the god Amun and his temples. Since herds of cattle were a chief part of the revenues of temple and state, their overseer had a big task in being responsible for these tangible assets.

Holding these two positions, Ken-Amun was apparently a member of the King's Privy Council, and was, as he advertised on his tomb, a close associate of Pharaoh Amenhotep, taking on various missions for the Pharaoh, such as confidential investigator, aide de camp, and secretary.

The tomb was, of course, at Thebes about 350 miles up the Nile from Cairo. No less exclusive site would have satisfied the King's Steward. Thebes on the east bank of the Nile was the lively and elegant capital city of Egypt, where Ken-Amun and his Pharaoh had their headquarters. Thebes on the west bank of the Nile, back from the narrow green riverbank strip, was the capital of the dead. The land here was a lifeless wilderness of arid gorges. It was in this desolate "suburb" of the capital that the pharaohs of the period ordered their tombs burrowed underground in the hope—the vain hope—that they were outwitting grave robbers. Here, in the Valley of the Kings, Amenhotep II dug his royal tomb. And here his ambitious Chief Steward prepared an almost royal testing place for himself.

"The ambition of an Egyptian official was not limited to rivalry with his contemporaries," Mr. Davies explains. "He yearned to have a pretext, however insufficient, for saying, 'Never has such success been achieved before.' Ken-Amun laid out a tomb calculated to provide more square cubits of wall space than any predecessor, not excepting the grand vizier, Rekh-mi-Re."

Plenty of money to build and decorate a record-breaking tomb Ken-Amun had,

or received from the Pharaoh. And lavishly the tomb was planned. But when it came to the scientific problems which the site presented, all Ken-Amun's ambitious dreams and all his money could not provide enough engineering skill. And so the tomb of "enduring" rock was unfortunately located and very inexpertly engineered.

To start with, the mayor of Thebes had taken the best place along the hill where the high officials were lining up their tombs. So, Ken-Amun had to go farther along, where the material to be excavated was a conglomerate of pebbles and boulders cemented into a kind of concrete.

Shams Without Strength

"When the Egyptian builder had to become a quarryman," Mr. Davies continues, "excavating instead of constructing, he paid little attention to the very different conditions. His rock pillars were shams without strength to support anything, and the ceilings and walls, too, after being roughly bashed into something like shape, had to be made



AN UNUSUAL PERSONALITY

Portrait statuette of Ken-Amun, Chief Steward to Pharaoh Amenhotep II, and holder of scores of other titles.

up liberally with mud that was moulded into rectangular forms and plane surfaces. They looked very well—until they fell down; an incident which often was not very long delayed, if at other times the extreme optimism of their architects has been fully justified.

"The tomb of Ken-Amun is no exception. It is now an unsightly ruin, though it has enshrined and still enshrines some of the choicest work of the Egyptian painter's brush. The roof of the inner chamber has fallen away, so that its walls taper up out of sight towards the crown of the hill, and, as it is still crumbling, entrance there is a mild adventure. As for the underground passages, one pitied a sun-god who had nightly to pass through them and try to brighten their grim recesses. Those who have surveyed them, Robert Hay, Robert Mond, and myself with our laborers, unanimously agree that once in a lifetime is enough!"

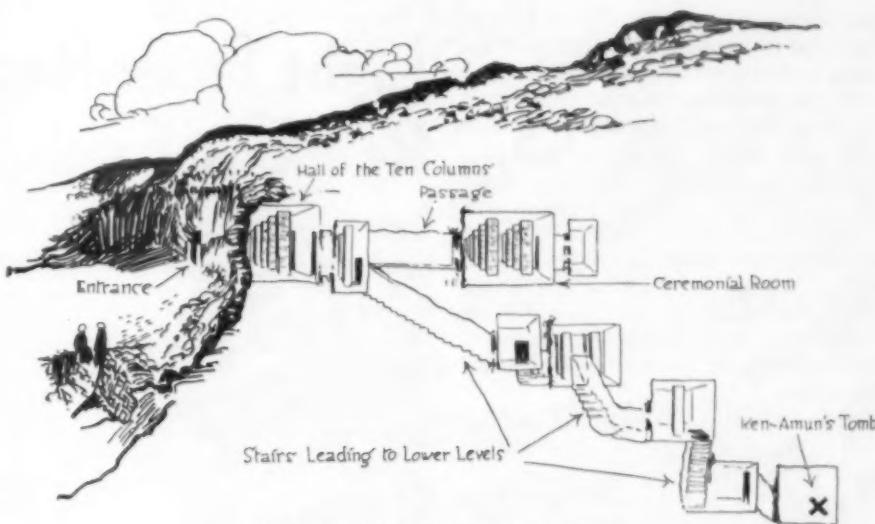
In spite of the damaged condition of the tomb, Mr. Davies has mapped its complex plan, even figuring out the intentions of Ken-Amun when they were not fully executed.

The tomb had a large entrance court cut in the steep slope of a hill. The visitor, entering from the glaring sunlight, would peer to right and left by whatever light he had provided, and find himself in a wide hall with ten pillars as shown on the cover of SCIENCE NEWS LETTER. Ahead of him would stretch a long passage, and beyond that the way opened into another pillared hall.

In none of these rooms would the visitor find the sarcophagus of the tomb owner. The suite was a ceremonial setting, of suitable proportions to show the importance of the man who was to rest there.

To reach the burial vault, the visitor would have to retrace his steps to the wide front hall of the tomb. At the far right-hand corner of this hall were steps, leading down into deep subterranean levels. Long, dark passages led on and down, around corners, through open chambers, down more stairs, and finally into the place for burial, sixty-two feet below the upper rooms of the tomb.

This was the plan. But Mr. Davies reports that only the decorators had any aesthetic conscience. To mention one example of shiftless workmanship, Mr. Davies found two windows which were to serve as light shafts for chapels. These windows were cut to look neat enough from the interior of the tomb, but were carelessly shaped on the out-



ELABORATE BURIAL GROUND

Cross section of the Egyptian hill side showing the construction of Ken-Amun's tomb. The many chambers, galleries and stairways were, however, much finer in conception than in execution.

side. And one of the shafts was cut so crooked that it failed entirely as a lighting device.

What with slack workmen and faulty rock for them to work in, Ken-Amun's tomb was fated to be less magnificent than his dreams had pictured it. The treacherous character of the rock caused at least one catastrophe, as modern excavation discovered. While laborers were constructing the rear hall of the upper suite, back under the hillside, a great mass of rock detached itself from the roof, carrying with it the upper part of some of the pillars. The damage was patched up with a false ceiling, and a brick partition was built across the hall to screen off the unsightly effects of the accident.

Remarkable Feature

This partition is one of the most remarkable features of the tomb. It was painted to resemble a wall with three false doors. Now, the back wall of an ordinary banqueting hall in an Egyptian residence was painted with false doors colored yellow with red jambs, in just this same manner. And the resemblance leads Mr. Davies to raise the question:

"Were then such doors in Egyptian houses provided in order that departed members of the family might enter from the underworld, and take part unseen in social gatherings, that fear of the dead so prevalent amongst primitive races, and by no means unknown in Egypt, being overcome in this case? The prayer of the dead man that he might revisit his home and the temples of his

city is in thorough accord with this interpretation."

Poorly-built and ill-fated as the tomb was, it had one redeeming feature. An artist who worked there, covering immense spaces of tomb walls with paintings to commemorate Ken-Amun's life, was so great that his painting overshadows the tomb's worst deficiencies. The artist was the best that Egypt could produce, and in Egypt of the fifteenth century B. C. the best was very fine indeed. That is the chief reason why this tomb of an Egyptian Chief Steward takes rank among the great tombs of Egypt.

It is one of the whimsical tricks of fate that Ken-Amun should be a figure of fame 3,400 years after his death, not on account of his vaunted political distinctions, but on account of the skill of one of his hired workmen.

It is also odd that the painter who deserves recognition for the tomb's masterpieces goes nameless. The artist did not sign his name to a single picture on the tomb walls. It rarely happened that an Egyptian painter did sign his work. To the Egyptians, painting a wall with a flat coat of color and covering the wall with frescoes was all just painting. The more skillful man was assigned to do the elaborate designs, to be sure, but he was regarded as a clever and superior craftsman, not as a creative genius who might command public honors.

Ken-Amun would be satisfied to know that his fine tomb is now regarded as one of Egypt's art treasures. He would be surprised that the unknown artist is

the center of interest. But he would be horrified to learn that his own portraits have been erased—every single portrait with one possible, doubtful exception.

When the tomb was visited by vandals and robbers in ancient times, as such tombs generally were, the intruders appear to have been personal enemies of the one-time Chief Steward. Wherever the name or the picture of Ken-Amun appeared or that of his relatives, the painting was spitefully defaced. Even Ken-Amun's dog was granted the distinction of having his picture destroyed.

But with all this damage and the further damage wrought by time, a great deal of very beautiful art remains.

Scenes show the presentation of New Year gifts to the King. Workmen bring mirrors with ebony handles, statues of the King in ivory and ebony, vases of gold, bowls of alabaster, suits of mail, battle-axes, chariots, and other products of Egypt's finest workshops. And Ken-Amun, as chief Steward presides over the pageantry of the offerings—or, rather, he did until his enemies removed him from the scenes.

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Science News Letter, January 16, 1932

STUDY NATURE

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ASTRONOMY

Light From Receding Nebulae Reaches Earth at Usual Speed

By Means of Photographs, Astronomer Learns Aberration Of Nebulae to be Practically the Same as with Stars

THOUGH it is apparently receding from the earth at the speed of 11,700 kilometers (nearly 7,300 miles) a second, the light from the group of faint nebulae in the constellation of Ursa Major, the great bear, reaches us at the usual rate of about 186,000 miles a second. This has been ascertained by Dr. Gistaf Strömberg, of the Mount Wilson Observatory, by measurements of the aberration constant.

The aberration of a star is its apparent displacement due to the earth's motion. The earth is moving around in its orbit at a speed of about 18 miles a second, which is a small, but appreciable, fraction of the speed of light. When the earth is moving at right angles to the direction of the star, which is when the star is on the meridian at midnight, the telescope itself, being carried along with the earth, moves a few feet while the light is passing from one end of the telescope to the other.

The result is that the telescope must be pointed slightly in advance of the star's real position. An analogous condition occurs when walking through

the rain with an umbrella. If the rain is falling vertically, and one is standing still, the umbrella is held directly overhead. But if one is walking along, even though the rain is still falling vertically, the umbrella must be tilted forward, for then, after the rain drops have fallen below the level of the umbrella, the person carrying it advances to meet them.

By means of photographs of these faint nebulae, which are supposed to be at the vast distance of 70 million light years, Dr. Strömberg measured their aberration. He found that it is practically the same as with stars, so that the fact that these nebulae are receding from us does not affect the speed of their light through space. This is what was expected, for ever since the famous Michelson-Morley experiment, which started the groundwork of the relativity theory, it has been supposed that light has the same velocity anywhere, regardless of the motion of its source, or of the observer.

Science News Letter, January 16, 1932

PALEONTOLOGY-EVOLUTION

New Find Points to Man's Descent From Sea Scorpion

VERTEBRATE animals of all degrees, including man himself as a physical being, were traced back to an obscure race of sea scorpions, now known only as fossils, by Prof. William Patten of Dartmouth College, speaking before the American Association for the Advancement of Science.

The connection between the highest vertebrate forms and these humble ancient arachnids of a thousand million years ago links through the extinct group of sub-fishlike creatures called ostracoderms. For years Prof. Patten has held for an ancestry of vertebrates

through ostracoderms, but certain fossil evidence has been lacking. Now, from the island of Oesel in the Baltic Sea, come well-preserved ostracoderm specimens that fill the gap. They show how the face of the vertebrate type of animals was founded by the union of a number of skeletal arches in the mouth region of the ostracoderm. The outstanding feature of the change was the shift from the lengthwise, slitlike mouth of the invertebrate type, opening sideways, to the typical crosswise mouth of the vertebrate type, with jaws that work up and down.

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BEDS OF SEAWEED

—caused the formation of these massive rocks millions of years ago, in what is now Glacier National Park.

GEOLOGY

Ancient Plants Gathered Lime to Help Build Rocks

PLANTS that probably resembled modern aquatic forms called water biscuits gathered lime out of the water they lived in and helped to build some of the most interesting of the ancient rocks to be seen in Glacier National Park. A new investigation of these massive blocks of fossil algae has been reported by two geologists, Dr. and Mrs. Carroll Lane Fenton, in the *Journal of Geology*.

New Species

There had been earlier investigations of these plant-made rocks in Glacier National Park and elsewhere in the West, but the formations investigated by Dr. and Mrs. Fenton contain specimens that are specially large and abundant. They belong to a very ancient part of the world's history: the Proterozoic, in whose rocks have been found almost the oldest recognizable fossils.

Several distinct forms of plant fossils could be recognized. Six of them had been previously described by the late Dr. Charles D. Walcott, secretary of the Smithsonian Institution; but three definitely new species were found by Dr. and Mrs. Fenton.

It is not certain whether the shallow waters in which these rock-making sea-

weeds grew belonged to the sea or to a fresh-water lake. However, Dr. and Mrs. Fenton incline to the opinion that the formation is of marine origin.

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BACTERIOLOGY

Danger Seen in Dual Life Of Tuberculosis Germ

THE TUBERCULOSIS germ has a double life and can shrink itself into a dwarf form beyond the visibility of ordinary microscopes, Dr. Ralph Mellon of Western Pennsylvania Hospital's Institute of Pathology, Pittsburgh, announced to the meeting of the Society of American Bacteriologists.

This new chapter in the life cycle of the microscopic bearer of the great "white plague" may explain the disputed action of BCG, the living vaccine against tuberculosis developed in France, and it may throw light on ills similar to tuberculosis, such as Hodgkin's disease.

Dr. Mellon found that ordinary tubercle bacilli, which are slender rod-like organisms, may develop under suitable living conditions into granules which have much less ability to produce the disease. These granules are ultramicroscopic and pass through the finest filters but may be brought back to a visible form when fed proper food. The ordinary germs are called acid-fast because they retain a red stain even when washed in acid, and the granules are

also acid-fast. The granules in turn may develop into the ordinary acid-fast, virulent tubercle bacilli, or they may develop into other bacilli which are not acid-fast and not virulent and which Dr. Mellon finds look like the bacilli that cause diphtheria.

The existence of such a minute, filterable form of the tuberculosis germ has been the subject of scientific controversy for nearly a decade. No one until this time has succeeded in cultivating it from a growth of a single bacterial species.

Dr. Mellon warned that even though the familiar form of the tubercle bacillus may disappear from the tissues of the body danger still threatens the patient from the possible unsuspected presence of one of the variant forms of the germ which may at any time develop disease-producing powers.

Science News Letter, January 16, 1932



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CHEMISTRY

Discovery of Double-Weight Hydrogen Was Anticipated

While Not Separating New Isotope, Alabama Professor Reported its Existence to Chemical Group in September

THE RECENTLY heralded discovery of a new and heavier kind of hydrogen atom was anticipated by Prof. Fred Allison, of the Alabama Polytechnic Institute, one of the contestants for the honor of discovering the missing chemical elements 85 and 87.

The discovery was reported to the American Chemical Society in September prior to the recent announcement of the spectroscopic detection of the new kind of hydrogen by Prof. Harold C. Urey and Dr. G. M. Murphy of Columbia University and Dr. F. G. Brickwedde of the U. S. Bureau of Standards. Details of Prof. Allison's work will be published in *Industrial and Engineering Chemistry*.

No separation of the two kinds of hydrogen was made by Prof. Allison. Dr. Brickwedde concentrated the heavier constituent of the gas fivefold.

Prof. Urey's measurements on the hydrogen spectrum agree with the estimate of Prof. Allison in giving the proportion of the new double-weight hydrogen as about one atom to 4,000 of ordinary hydrogen.

The new and still disputed magnetooptical method of chemical analysis, on which Prof. Allison bases his claims to the discovery of the missing elements, was also used in detecting hydrogen of atomic weight two. This method can detect as little as one part of a substance in a hundred million, and also it will separately identify isotopes, the atoms of different weight which make up many of the common elements. Tests show, with one or two exceptions, the number of isotopes revealed by Prof. Allison's new method is identical with that found by other means. This establishes the value of the method.

Prof. Edna R. Bishop and Margaret Lawrenz of the Alabama Experiment Station have also shown by a study of uranium and thorium leads by the Allison method, that the different isotopes are singled out in the order of their abundance.

Prof. Allison's paper giving this proof of the hydrogen isotope will read in part as follows:

"These results would be in accord with those of other metals if two isotopes of hydrogen are postulated. Quantitative experiments recently carried out on . . . acids and water, interpreted upon this postulate, indicate without exception that the lighter isotope is far more abundant, very roughly in the ratio of several thousand to one, and further that, . . . the mass of the heavier isotope is probably two, though the evidence as to the exact mass is not conclusive. We are unable to suggest any explanation of these doublets unless it be upon the hypothesis of two isotopic components of hydrogen."

Science News Letter, January 16, 1932

ARCHAEOLOGY

Self-Made Roman Emperors Gain Archaeological Fame

TWO "SELF-MADE" Roman emperors, who rose from humble stations in life to the glory of ruling an empire, are in the world's limelight again after 1,600 years. Inscriptions bearing their sonorous names, Galerius Valerius Maximianus and Flavius Valerius Severus, have been discovered by the Uni-

versity of Pennsylvania Museum expedition at Minturno, Italy.

The field work of the expedition, directed by Dr. Jotham Johnson, has already yielded many pieces of Roman sculpture in addition to the important inscriptions, and it is hoped that these relics will shed new light on the history of the Roman Empire.

Galerius was the son of a herdsman and began his own career in his father's business. Entering the Roman army, he served with distinction and following the acceptable formula for self-made heroes, he won the hand of the emperor's daughter. Galerius' reign as emperor, from 305 to 311 A. D., is known to history chiefly for his edicts of persecution against the Christians and his final reversal of his position when he legally recognized Christianity in Rome.

In his meteoric career, Galerius pulled up with him his faithful Flavius, who ultimately was awarded the rank of Caesar.

Minturno, where the inscriptions of these two emperors have been discovered, figured in Roman history from earliest days of the Empire. In 295 B. C. Minturno was admitted as a Roman colony, one of the first towns to be granted this privilege.

Discovery of a great sewer, antedating the period of Roman occupation, shows the site to have been inhabited very early. In their handling of sanitary construction, the people of Minturno were decidedly in advance of the Romans, Dr. Johnson considers.

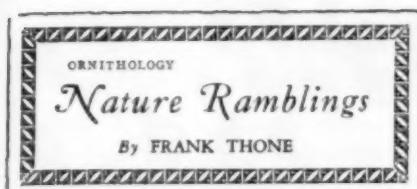
The excavations at Minturno are the first by non-Italians in Italy in many years.

Science News Letter, January 16, 1932

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Seagulls

SEAGULLS are almost always spoken and written about as part of the romantic setting of the sea coasts, as though they cannot exist apart from salt water. As a matter of fact, however, they are very frequently found hundreds of miles from the nearest ocean frontier, perfectly at home on great inland lakes, though rarely appearing on rivers.

Seagulls are one of the commonest of sights on the Great Lakes, for example; they circle and scream amid the noise and smoke of city water-fronts. Even as far west as Chicago and Milwaukee they are permanent residents, retiring to the mouths of small streams kept unfrozen by commercial pollution when ice blocks the open water in January. They appear on the Great Salt Lake in Utah, and on that highest of North American fresh-water bodies, Yellowstone Lake. On these two lakes, however, they are not permanent denizens, but migrate to the ocean in winter. Some naturalists state that they go to the Gulf of California—a route which may have been established many millenniums ago, when the Pacific extended eastward much farther than it does at present.

The gulls of the Great Salt Lake are rigidly protected by Utah law; it is a crime to kill one. When the Mormon settlers planted their first crop, hordes of crickets began to ravage the fields and starvation stared the colony in the face. When the situation appeared most desperate, clouds of white gulls suddenly appeared. Settling on the fields, they fed on the crickets, sweeping the pest away as the insects had lately threatened to sweep the crops. The devout Mormons hailed this as a direct act of Providence, and gulls have been sacred birds in Utah ever since.

Science News Letter, January 16, 1932

PSYCHIATRY

Jugular Vein Safely Pierced In Study of Mentally Sick

JUST what happens within the brains of persons mentally ill, anesthetized, or drugged promises to be discovered in the near future through experiments on human beings in which blood is extracted safely from the artery leading to the brain and from the vein carrying blood away. The new method of chemical and physical investigations of brain activity to be used has been described by Dr. Abraham Myerson, of Boston, to the American Association for the Advancement of Science.

Through a careful operational technique, Dr. Myerson and his associates found it possible to puncture with a syringe both jugular vein and common carotid artery, to withdraw relatively large quantities of blood, and then to analyze this blood to see what materials in it the brain uses. The patient need not be unconscious as the operation is performed under novacain local anesthesia.

The cause of many kinds of insanity and the usefulness of various treatments may be decided from experiments on the insane by this new technique. Dr. Myerson sees "a safe and fruitful approach to the clinical and scientific problems of neurology and psychiatry."

That the brain either uses or withdraws more sugar from the blood than does the arm is one of the first conclusions reached through use of the new

method. The brain uses or stores during anesthetization less than half of the sugar used normally.

Dr. Myerson has studied the pressures within the brain blood and spinal fluid under the influence of ordinary activity, drugs and anesthetics. Lowering the head, coughing, loud talking or singing raises the pressure. Some of the effects of caffeine may be due to the fact that it reduces cerebrospinal fluid pressure and leaves unchanged the vein and artery pressure.

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BIOLOGY

Biological Station Opened On Marine Mountain Peak

NEW IMPETUS is given the study of marine life in the seas around the marine mountain peaks whose summits are the Bermuda Islands with the opening of the Bermuda Biological Station, made possible by the Rockefeller Foundation and the governments of Great Britain and Bermuda.

The new station has been established in St. Georges near Dr. William Beebe's summer base of deep-sea exploration work. It will be associated with the famous Woods Hole Oceanographic Institute in Massachusetts in a program of cooperative research.

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• First Glances at New Books

Physics-Engineering

THE CONQUEST OF SPACE—David Lasser—*Penguin Press*, 271 p., \$3. This is Jules Verne brought up to date. The author, president of the "American Interplanetary Society," partly by imaginative story and partly by discussion of scientific considerations, gives his idea of how the first trips to the moon and the planets will be accomplished. Theoretical speculation on this subject by competent persons has reached a further stage of development than the public imagines. Mr. Lasser foresees ultra-rapid rocket transportation on the earth in 1950. Doubtless some children who read this book will sacrifice their lives in the early unsuccessful attempts to leave the surface of the earth by rocket. More interesting to the reviewer than the immediate astronomical results of such attempts, whether successful or not, is the possibility they raise of uniting for the first time the human race in a common wave of enthusiasm such as Lindbergh generated in the United States.

Science News Letter, January 16, 1932

Medicine

THE CONQUEST OF OLD AGE—Peter Schmidt; trans. by Eden and Cedar Paul—*Dutton*, 307 p., \$5. Dr. Schmidt is a disciple of Steinach. In this book he discusses various methods of rejuvenation, their indications, and results, taking case histories from his own and other physicians' records. As the book is intended for intelligent laymen as well as scientists, a glossary is appended.

Science News Letter, January 16, 1932

General Science

ANNUAL REPORT, 1930—*Rockefeller Foundation*, 380 p. The varied and extensive activities carried on with the support and guidance of the Rockefeller Foundation are set forth in this report, which is considerably embellished by more than the usual number of interesting pictures.

Science News Letter, January 16, 1932

Patents

PRINCIPLES OF PATENT LAW FOR THE CHEMICAL AND METALLURGICAL INDUSTRIES—A. W. Deller—*Chemical Catalog*, 483 p., \$6. The inventor of bakelite resin says in the foreword: "My own experience about patent laws has been acquired slowly, after long years of experience, and at the cost of some ex-

pensive blunders." A member of the New York Bar has written this book so that other chemists may be able to avoid this sort of trouble. Chemists, metallurgists, research directors and executives are confronted with a great variety of patent problems. Technical literature does not handle the legal aspects of these problems and legal writings are too complicated for the layman. The present concise and complete text should improve this situation.

Science News Letter, January 16, 1932

Medicine

How's YOUR BLOOD PRESSURE?—Clarence L. Andrews—*Macmillan*, 225 p., \$2.50. A subject of enormous interest to many people is discussed in a sane and helpful way. Dr. Andrews tells what blood pressure is, the significance of high and low blood pressures, as much as is known of their causes, and, in general, what may be done about them.

Science News Letter, January 16, 1932

Ethnology

SOURCE MATERIAL FOR THE SOCIAL AND CEREMONIAL LIFE OF THE CHOCTAW INDIANS—John R. Swanton—*Govt. Printing Off.*, 282 p., 60c. The Choctaws, Dr. Swanton tells us, were rather neglected by early ethnologists, because they engaged in no complicated religious ceremonials and seldom attracted attention to themselves by promoting warfare. They were "just folks" who prospered economically by devoting themselves to agriculture and trade. After thus explaining the meagerness of available data, Dr. Swanton presents in his source book a surprising collection of facts about education, war customs, religion, history, games, crime, and other points of interest which he has gathered regarding this remarkable tribe.

Science News Letter, January 16, 1932

Child Health

CHILD HEALTH AND THE COMMUNITY—Courtenay Dinwiddie—*Commonwealth Fund*, 80 p., \$1. A brief survey of the child health activities of four communities under the guidance of the Commonwealth Fund. The experiences and problems discussed in this volume will be helpful to other communities about to embark on similar programs for promoting the health of their children.

Science News Letter, January 16, 1932

History

NEBUCHADNEZZAR—G. R. Tabouis—*McGraw-Hill*, 399 p., \$5. In fluent narrative the rise and fall of Nebuchadnezzar the Great is told, from the day when he fought as a rising young leader at the fall of Nineveh down to the scenes of his decline and death. The book abounds in local color, at times barbarically beautiful, again barbarically horrible. The author has so steeped herself in details of Chaldean custom and history that she writes as if telling of the public appearances and private life of some modern hero. Casual readers may feel that the biography would have gained by pruning. Readers especially interested in ancient history will welcome the completeness of the account.

Science News Letter, January 16, 1932

Child Study

DIRECTORY OF RESEARCH IN CHILD DEVELOPMENT—J. Allan Hicks—*National Research Council*, 74 p., 50c. A new and revised edition of an excellent handbook showing who's who in the field of child study and what they are doing. A feature of special value is the new detailed subject index. Published as No. 102 of the Reprint and Circular Series.

Science News Letter, January 16, 1932

Hygiene

HEALTH AND HUMAN WELFARE—William E. Burkard, Raymond L. Chambers and Frederick W. Maroney—*Lyons and Carnahan*, 532 p., \$1.40. A health text for secondary schools. This book is distinguished from the usual hygiene text by the inclusion of special sections on hygiene and work, care of the baby, care of the sick, and the history of medicine and hygiene.

Science News Letter, January 16, 1932

Geology

LATE-GLACIAL CORRELATIONS AND ICE RECESSION IN MANITOBA—Ernst Antevs—*Geological Survey, Canada*, 76 p., 15c. The career of the ice sheet in Ontario and Quebec having been traced by Dr. Antevs, he has set about studying events of the Late-Glacial epoch in the next western province, Manitoba. In presenting the results of the investigation, he correlates the data on these Canadian regions and also discusses correlations between America and Europe on the basis of clay varves.

Science News Letter, January 16, 1932